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Student Involvement Measured by Login and Perceived Learning of Strategic Management in an On-Line Business Simulation Game

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Abstract. While student involvement in a business simulation game is often presumed to relate to student learning and performance in the game, such relationships have received scant attention in prior empirical studies. As more and more business simulation games are run online these days, it is possible to measure student involvement with student login data which indicate how frequently and consistently a student logs into an online simulation game. This study sought to examine and test whether the frequency and consistency of student login activities as proxy measures of student involvement in a business simulation game were related to perceived student learning of strategic management from the game. Using data collected from 204 undergraduate business students participating in a popular business simulation game (Capstone), the study found student login frequency was positively associated with students' perceived learning of key strategic management knowledge and skills, while student login consistency was not related to the perceived learning. Research and pedagogical implications from these findings are discussed.

Key words: student involvement, login, learning, strategic management, simulation games.

1. Introduction

Today business simulation games are widely used to teach strategic management in business schools around the world (Faria et al., 2009). Although the educational efficacy of business simulation games has been well established in the extant literature (Wolfe, 1997; Faria, 1998; Jennings, 2002; Zantow et al., 2005), student learning from a business simulation game may vary at the individual level, given diversity in student interests and abilities as well as differences in external factors such as teamwork environment and instructor intervention (Wolfe & Luethge, 2003). Indeed, research on the determinants of student learning from business simulation games has found a number of factors (e.g., individual achievement motivation, team processes and instructor support) that may influence individual learning from the simulation experience (Wolfe, 1997; Snow et al. 2002; Adobor & Daneshfar, 2006; Coffey & Anderson, 2006; Tiwari et al., 2014). Another important potential determinant of student learning is student involvement or engagement in the decision making activities of the simulation. While active

student involvement is presumed to increase student learning and found to be associated with better student performance in the simulation (Wolfe & Luethge, 2003), few empirical studies have tested the relationship between student involvement and student learning in business simulation games. Since performance in the simulation is often assessed at the group level and does not necessarily equate to individual learning (Anderson & Lawton, 1992; Wolfe, 1997; Washbush & Gosen, 2001), it is necessary to ascertain the relationship between student involvement and student learning actually exists at the individual level.

Furthermore, assessing and monitoring individual students' involvement levels in the simulation activities have traditionally posed a challenge for instructors (Wolfe & Luethge, 2003). Students typically participate in the simulation games in teams, and many team meetings and decision making activities take place outside of class, making direct observations by instructors difficult. Using peer-evaluations to measure and track student activities in the games is not only time-consuming and cumbersome to administer frequently, but may also result in inaccurate or biased assessments (Fellenz, 2006). As many of today's business simulation games are run online and allow easy collection of student login data, it is possible and efficient to tap into information about the login behaviors of students and use it to measure and monitor student participation in the decision making activities during the simulation. Since student engagement levels in the games may vary due to differences in student interests, expectations, motivations, abilities and learning styles, knowledge about the learning impact of certain login patterns of students (e.g., how frequently and consistently a student logs into a game) may increase our understanding of how to better assess and monitor student involvement in the simulation exercise to ensure learning. Current research investigating the relationships between student usage of online course resources and class performance reveals that student login data offers an objective, equitable and efficient tool for evaluating individual students' contributions to team projects and identifying potential 'social loafers' or under-performing team members (Braender & Naples, 2013). Unfortunately, the efficacy of using student login data to track and assess student involvement in a business simulation game has not been investigated in the business simulation literature. It is, therefore, worthwhile to explore the potential linkages between certain student login data (login frequency and consistency) and student learning in online business simulation games to see if such data represents a potential useful pedagogical tool.

The research question this study sought to address is whether the frequency and consistency of student login as proxy measures of student involvement in a business simulation game were related to student learning of strategic management. Specifically, the study examined and tested the potential relationships between these two measures of student involvement and student

perceptions of their learning of key strategic management knowledge and competencies, using data collected from a sample of students participating in an online business simulation game (Capstone). Investigating these relationships will not only provide evidence on the learning impact of student involvement, but may also inform us about the potential pedagogical value of this student login information in monitoring and managing student engagement in the simulation activities. In the following section, the paper first examines the roles of student involvement in influencing the learning outcomes from business simulation games, based on a review of the extant literature on the determinants of student learning in the simulation experience. Drawing from recent research on monitoring student usage of online course materials and tools, the paper then explores the potential linkages between student login frequency and consistency as proxy measures of student involvement and perceived student learning in business simulation games.

2. Literature Review and Hypothesis Development

It is well recognized in the simulation literature that students may exhibit different levels of learning from business simulation games even though the games are found to be an effective tool for teaching strategic management (Wolfe, 1997; Faria, 1998; Jennings, 2002; Zantow et al., 2005). One main reason for the varying levels of student learning is that individual students are often not equal participants with different interests, attitudes, motives, expectations, skills and abilities, and learning styles (Wolfe & Luethge, 2003; Coffey & Anderson, 2006). These individual differences are thus likely to result in different learning outcomes for different students even if they perform well in groups (Wolfe & Luethge, 2003). Indeed, empirical studies on the conditions for effective learning from business simulation games have shown that student learning at the individual level is subject to the influence of certain personal traits or characteristics. From a survey of 1967 students who had participated in a popular business simulation game (Capstone), Coffey and Anderson (2006) found the students with higher achievement motivation perceived greater learning value from the simulation experience. In their study of what affected the effective use of another popular business simulation game (Business Strategy Game), Adobor and Daneshfar (2006) reported that students who perceived the simulation as reflective of real life situations obtained higher levels of learning of key strategic management skills. Towler et al. (2008) even found age and gender accounting for some variances in the learning outcomes obtained from playing the Business Strategy Game.

External factors such as team dynamics and instructor support have also been shown to have a bearing on student learning from business simulation games (Wolfe & Chacko, 1983; Washbush & Gosen, 2001; Adobor & Daneshfar, 2006;

Coffey & Anderson, 2006; Tiwari et al., 2014). For example, Wolfe and Chacko (1983) investigated the team size effect on individual learning levels and found the students playing in teams of three to four members had increased their knowledge of strategic management concepts and facts more than those in teams of other sizes. Adobor and Daneshfar (2006) found that task conflict in the team (i.e., the degree of idea exchanges) increased learning of individual team members while emotional conflict in the team reduced individual learning. Besides team size and processes, Coffey and Anderson (2006) observed in their study that students felt more positive about the learning value of the simulation if the instructor was more helpful and knowledgeable. In a study of the performance effects of two different manners of introducing a business simulation game to the students, Snow et al. (2002) reported that students perceived the simulation experience more useful and effective if the simulation was integrated into the course throughout the term instead of being treated as stand-alone experience.

While prior research has identified a number of personal and external factors that may be linked to learning of strategic management from participating in business simulation games, little attention has been paid to the link between how involved students are in the simulation activities and how well they learn from the games. This is probably due to the presumed relationship between participation and learning and to the difficulty in monitoring and measuring student involvement at the individual level. Nevertheless, student involvement in a business simulation game and its impact on student learning are important to our understanding of how to help individual students acquire more strategic management knowledge and skills from the simulation experience for several reasons. First, differences in personal characteristics (e.g., motivation and abilities) affect learning through their influences on efforts. For instance, a student with a high need to achieve in the game is expected to put in more efforts in the game activities and therefore more likely to learn more from the simulation. Second, external factors such as team dynamics and instructor support may also affect a student's engagement level. Emotional conflict in teamwork, for example, may cause individual team members to waste time in resolving conflict and not to spend enough time in thinking about the decisions (Adobor & Daneshfar, 2006). Students who obtain more help from knowledgeable instructors are likely to be more interested and motivated (Coffey & Anderson, 2006). Third, active participation in the decision making activities of the game is a prerequisite of learning (Anderson & Lawton, 2009). In other words, it is hard to imagine one would learn a lot about strategic management without some experience in contemplating and making strategic decisions.

The role of student involvement in business simulation games has received some attention in the business simulation literature. Wolfe and Luethge (2003) conducted a study to examine and test Goosen's (2002) "know little" thesis which contended that certain design features (e.g., 'auto pilot') in business simulation games made it possible for student teams to participate and succeed in the games

without much involvement in the simulation. The researchers created three types of game-administrator-controlled 'ghost' firms with varying involvement levels to compete in the Global Business Game against each other and student teams from four universities. The fully engaged 'ghost' team made decisions by reading the player's manual (the rules) thoroughly and employing the underlying business theories to analyze the competitive situation carefully and implement the strategies. The uninvolved 'ghost' firm did not read the players' manual and generated decisions by repeating the game's start-up decisions throughout the simulation. The third 'ghost' firm made decisions by simply copying the decisions of the most profitable company in the previous decision round. This copycat firm was thus somewhat involved. Analyses of the performance results achieved by the three types of 'ghost' firms showed that the engaged firms earned the highest profits. The copycat firms received the second highest profits only during the first half of the games. The researchers also found the student teams generally fared better than the uninvolved and copycat 'ghost' teams. Based on these findings, Wolfe and Luethge concluded that high involvement in the game led to better performance outcomes. While the study represented one of the few attempts to provide empirical evidence in support of the presumed link between involvement (effort) and game performance, it was not clear how involved the individual students or the student teams were in competing against the 'ghost' teams. Another limitation of the study was that no attempt was made to assess the relationships between student involvement and learning at the individual level.

As most of today's business simulation games are run online and can automatically capture information about how many times a student logs into a game to make decisions, it now becomes possible to use student login data as proxy measures of student activities in the game to track student involvement and study its relationship with student learning. While receiving little attention in business simulation literature, student login information has been employed to predict student performance and learning in research on student usage of online course resources (Wang & Newlin, 2001; Wang & Tucker, 2001; Baugher et al., 2003; Simpson & Du, 2004; Mo & Zhao, 2012; Braender & Naples, 2013). In their study of the predictors of student performance in virtual classroom, Wang and Newlin (2001) investigated the relationship between student involvement in online activities and student success in online courses. The researchers found that students enrolled in three Web-based sections of psychological statistics achieved higher course grades by viewing the home pages of the course more often. In another study of 108 undergraduate students taking two online sections of an introductory management course, Baugher et al. (2003) examined two types of student involvement (intensive and consistent) in online coursework and their effects on the course performance of the students. The researchers used total hits to the website of the course to measure intensive involvement. To assess consistent involvement, they developed a new measure (hit consistency) which indicated how regularly a student visited the website between class meetings.

Their findings revealed that only hit consistency was positively correlated with the classroom performance measured by course average ranging from 0 to 100.

In a more recent investigation, Mo and Zhao (2012) argued that student effort in a distant learning course could be measured and monitored by some student activity data captured in major learning management systems such as Blackboard. The researchers adopted two measures of student effort (the number of times a student logged on the course site before an exam and the total time the student spent on the course site before the exam) provided by Blackboard and tested their relationships with performance in three course exams. The results showed that both measures were positively associated with student performance in the second and third exams. In another recent study, Braender and Naples (2013) explored the efficacy of using student online activity data to track student contributions to team projects. Two major online indicators (total logins and frequency of using a 'Collaborative Document Management' tool) of a student's participation in team projects were tested for their potential effects on the team project grades the student received in a management information systems course. The first indicator reported the frequency of logging into the course system. The second indicator captured the date and time for each use of the CDM tool and included all uploads and downloads of the team documents. The relationships between the use of peer evaluations and team project grades were also tested in the study. The findings showed that both total logins and frequency of using the CDM tool correlated positively with team project grades, with the latter measure explaining greater grade variation. Two other interesting findings were reported in the study. Peer evaluations, in general, were not correlated with team project grades, and how frequently a student accessed the CDM tool was positively correlated with the student's contributions to the team assignments.

It is evident from the above-mentioned studies on online tracking of student activities that student login frequency may serve as a useful proxy measure of student involvement in online class activities. Measuring student involvement in such a manner not only offers more objective assessment of student activity levels than the conventional methods such as peer evaluations, but may also be used to predict student learning or class performance (Wang & Newlin, 2001; Mo & Zhao, 2012; Braender & Naples, 2013). The evidence also suggests that student login frequency may capture the level of efforts a student puts into a team project (Baugher et al., 2013). Since most of today's business simulation games are played online, students must log into a game in order to contemplate and make decisions. It is then reasonable to expect login frequency to reflect a student's engagement level in the simulation activities and influence perceived student learning. Besides logging into the game frequently to contribute to the team decisions during the whole simulation exercise, a student needs to consistently participate in the teamwork by logging in in every decision round because contributions to the team's decisions in each round are as important as the overall decision efforts the student makes in the entire game. For this reason, login

consistency represents another key dimension of student involvement in the game. Moreover, in light of the performance impact of hit consistency found in Baugher et al. (2003), student login consistency is also expected to have a positive effect on perceived student learning in this study.

Hypothesis 1: student login frequency is positively related to perceived student learning.

Hypothesis 2: student login consistency is positively related to perceived student learning.

The next section describes the methodology of the study, including the student sample chosen, the measurements of the independent, dependent and control variables, and the statistical analysis employed to analyze the data.

3. Methods

3.1. Sample

The subjects of this study were 204 undergraduate business students from a private university in the northeast region of the United States. Between 2012 and 2013, the students enrolled in 10 sections of a strategic management course which used a business simulation game (Capstone) developed and administered by Capsim. In the game, the students worked in teams of 2 to 4 people and each team managed a company to compete against five other companies run by other students in the sensor industry. The game consisted of six rounds of decision making by the teams and the typical decisions were made in research & development, marketing, operation, finance and total quality management. The students came from different majors in business administration, marketing, accounting, economics, finance and sports management with an average GPA of 3.19. One hundred and twenty three (60%) students were male and eighty one (40%) were female.

3.2. Measures

Independent variables. Student login frequency was measured by how many times a student logged into the game to make decisions during the six decision rounds. The game automatically captured and reported this number to the instructor. Not directly provided by the game, student login consistency was measured by following a similar procedure to Baugher et

al. (2003). When a student logged in at least once in a decision round, a 1 was assigned to that student for that round. If a student did not log in at least once during a decision round, a 0 was assigned. Since there were six rounds in the game, this measure could range between 0 and 6.

Dependent variable. In the current study, student learning from playing the business simulation game was assessed by students' perceptions of how well they learned the key strategic management knowledge and skills from the game. Perceived student learning has been employed to identify and test various potential correlates (e.g., team processes, realism of the simulation and instructor support) of student learning from and satisfaction with the simulation experience (Anderson, 2005; Adobor & Daneshfar, 2006; Coffey & Anderson, 2006; Tiwari, 2014)). A nine-item survey instrument was constructed to measure student perceptions of the degree to which certain critical strategic management knowledge and competencies (top management perspective, knowledge of planning and integrating business functions, and abilities to develop and implement competitive strategies) were learned from the simulation. Four of the nine items were adopted from Jennings (2002) and five other items were developed to tap the learning about strategy formulation and implementation and add more items similar to Jennings' four items (appendix I). Each item in the instrument was assessed on a seven-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

The questionnaires were given at the end of the simulation game, and participation was voluntary. Before filling out the survey, the students were instructed about the purpose of the survey (improving the use and administration of the simulation game for future classes) and assured that non-participation or negative opinions would not adversely affect their course grades. All the students enrolled in the 10 sections of the course participated in the survey, hence returning 204 valid responses. Since the questionnaire was not anonymous, a check was made to see whether this might result in biased responses from the students. Twenty three students in one section were used as a comparison group whose inputs were sealed and held by a student until after all the students in that section received their course grades. T-test of comparing the mean score of perceived learning by the comparison group to that by the rest of the sample showed no significant differences between the two groups: ($t = .052$, $p > .959$). It appears that the students expressed their opinions freely even if their inputs were not anonymous.

To assess the construct validity and unidimensionality of the survey instrument, a principal components factor analysis with varimax rotation was performed on the nine items. The factor analysis revealed a single factor explaining about 60% of the total variance and thus supported the unidimensionality of the scale. The reliability (Cronbach alpha) of this scale was .91.

Control variables. Since team size and gender were found to affect student learning in business simulation games in prior research (Wolfe & Chacko, 1983; Towler et al., 2008), their potential effects need to be controlled. Another control variable used was academic ability. Previous studies found it a possible determinant of learning in business simulation games (Wolfe 1976; Washbush & Gosen, 2001). Academic ability was measured by grade point average (GPA) in this study.

3.3. Analysis

A hierarchical regression analysis was conducted to test the research hypotheses, using perceived student learning as the dependent variable. In the first step of the analysis, the three control variables (gender, team size and GPA) were entered as a set into the model. In the second step, the two independent variables (student login frequency and student login consistency) were added to the equation. The results from the hierarchical regression analysis are presented in the next section.

4. Results

Prior to the hierarchical regression analysis, the zero-order correlations among all the variables included in the study were examined. As shown in Table 1, student login frequency was significantly correlated with perceived student learning in the expected direction (r = .19, $p < .01$). On the other hand, there was no significant correlation between student login consistency and perceived student learning. It is worth noting that student login frequency was highly correlated with student login consistency (r = .56, $p < .001$), indicating possible multicollinearity between the two independent variables. Student login frequency was also moderately correlated with GPA (r = .26, $p < .001$).

Results from the initial hierarchical regression analysis (Models 1 and 2 in Table 2) indicate that student login frequency was significant in predicting perceived student learning (b = .197, $p < .05$) in the expected direction, hence providing some support for Hypothesis 1. Student login consistency, on the other hand, was not significantly related with perceived student learning. Thus, Hypothesis 2 was not supported. In view of the high correlation between student login frequency and student login consistency, the variance inflation factors (VIFs) associated with the estimated regression coefficients of the two variables were checked to detect potential multicollinearity. The VIFs ranged from 1.53 to 1.51 and thus suggested a low degree of multicollinearity. Nevertheless, removing student login consistency from the regression model (Model 3 in Table 2) increased the significance level for the relationship between student login frequency and perceived student learning (b = .20, $p < .01$) and reduced the VIF

for the estimated coefficient of student login frequency to 1.07. The next section discusses the pedagogical and research implications of the results from this study as well as its limitations.

Table 1: Means, Standard Deviations and Correlation Coefficients[a]

Variable	Mean	s. d.	1	2	3	4	5
1. Perceived student learning	5.6	.91					
2. Student login frequency	27.05	12.53	.19				
3. Student login consistency	4.96	1.24	.10	.56			
4. Team size	3.18	.48	-.06	-.02	.12		
5. GPA	3.19	.46	-.01	.26	.21	.14	
6. Gender	.60	.49	-.02	-.07	-.01	-.05	-.20

[a] N = 204. Correlations greater than or equal to .12 are significant at the .10 level; $r \geq .14$ are significant at the .05 level; $r \geq .18$ are significant at the .01 level; $r \geq .22$ are significant at the .001 level; all two-tail tests.

Table 2: Results of Hierarchical Regression Analyses[a]

Variables	Perceived Student Learning Model 1	Model 2	Model 3
Gender	-.026	-.021	-.021
Team size	-.065	-.055	-.054
GPA	-.009	-.061	-.060
Student login frequency		.197*	.20**
Student login consistency		.006	
R^2	.005	.042	.042
ΔR^2		.037	.037
F	.322	1.741	2.186+
ΔF		3.855*	7.744**

[a] N = 204. Standardized regression coefficients are shown.
$^{+}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

5. Discussion

The purpose of the present study is to investigate the potential relationships between how frequently and consistently students log into a business simulation game and their perceptions of how much they learn about strategic management from playing the game. Based on the self-reported data on student learning from 204 undergraduate business students, the study found that student login frequency was positively related to perceived student learning. This finding lends some support to the presumed relationship between student involvement in the game

and learning of strategic management to the extent that how frequently students log into the game to make decisions reflects to some degrees their engagement levels in the simulation. The finding further suggests that involvement not only matters to game performance as observed by Wolfe and Luethge (2003), but may also affect perceived learning from the game. Identifying student login frequency as a proxy measure of student involvement linked to perceived learning calls for more attention to and utilization of this readily available student data provided by most of today's business simulation games. Since assessing and tracking student activities with this measure are easy and much less time consuming, instructors can constantly check a student's login record (at least once at the end of every decision round) to gain some initial ideas of how much effort the student has put into the decisions. Frequent tracking of student participation is especially important for large teams (of more than three students) where social loafing is more likely to occur. When a student with infrequent logins is identified, it is necessary to confirm this low participation level with his or her teammates before approaching the student. Consulting other members in the team would also help the instructor identify potential individual and/or team problems associated with the student's lack of effort. When discussing with the student his or her less contribution to the team decisions, the login data can be used to back up opinions from other team members. Braender and Naples (2013) found in their study that social loafing was reduced when the students noticed that their online activities were being monitored.

Besides tracking student effort and progress, student login frequency data can complement other information (e.g., peer opinions and instructor observations) in grading a student's contributions to team performance in the competition. Given the subjectivity in peer assessment and instructor judgment (Fellenz, 2006), information about a student's login pattern offers an objective source of data, which allows the instructor to derive a more balanced evaluation of a student's effort and contributions in the simulation.

While supporting the positive role of student login frequency in perceived student learning, this study did not find a significant relationship between student login consistency and perceived student learning. Since on average the students in the study sample logged into the game in about 5 out of 6 six rounds, participating in one additional round did not seem to generate additional experience and learning for the students on top of often getting involved (logging in more frequently) during those five rounds when they took part in. It would be intriguing to see whether samples with lower average login consistencies may detect potential significant impact of student login consistency on learning in future studies.

This study contributes to research on what influence student learning and performance in business simulation games by suggesting another tool for assessing student engagement levels in the games. One key advantage of using student login frequency as a proxy measure of student involvement is that it is

easy to obtain from student login data captured and provided by many of today's business simulation games that are played and run online. With the aid of this convenient proxy measure, researchers can test the relationships between student involvement and other educational outcomes such as competitive performance in the games. The use of student login frequency will also facilitate future studies on the potential mediating roles of student involvement in the relationships between certain personal or external factors (e.g., individual motivation and team dynamics) and student learning or performance.

The findings from the study need to be interpreted within its limitations. One limitation lies in the possibility that student login frequency may not fully reflect the quality of student involvement in the game activities. It is possible that a student who frequently logs into the game does not actually try hard in contemplating and making decisions after logging in. It is also possible that some students may even try to 'game' the instructor's tracking of login frequency data. That is, once a student is told or aware that the instructor is monitoring how often he or she logs into the game, the student may deliberately log in more frequently to appear like an active participant while doing little after logging in. This kind of abusive behavior can be potentially controlled by making clear to students that evaluation of their contributions to team decisions and performance is not solely based on their game login frequencies and that tracking student online activities is meant to assist the instructor in identifying less active students early and help them reengage in the game before it is too late. Instructors may also consider incorporating peer evaluations at the end of the game into the determination of a student's grade for the simulation project and informing students of such use of peer assessment. The upshot is that students need to be convinced that they cannot gain much from gaming the instructor's use of their login data. A potentially better solution to the gaming problem is for the game developers to provide instructors with richer data about the decision efforts (e.g., number of decision uploads and number of access to round-end reports) a student makes after logging on the game. A more sophisticated measure of student online activities would help ascertain students who use the game software frequently are more likely to engage in deliberate thinking and actions and consequently learn more from their simulation experiences. Further research into the potential scope of the gaming problem and other ways of dealing with it may also help us better understand how to use the login frequency data more effectively.

Another limitation is that the learning effect captured in the study was based on student perceptions. Learning measured in such a manner may not equate with actual learning accrued from the game (Anderson & Lawton, 2009). It was possible that students participating in the game activities frequently might feel more positive about the learning effect, regardless of what they had actually learned about strategic management from the simulation. Moreover, student opinions of what had been learned in the game may be subject to the influence of the social desirability effect. Given these and other limitations of self-reported

learning (Anderson & Lawton, 2009), the impact of student login frequency on perceived learning found in the study needs to be further tested and validated by subsequent research employing objective measures of actual student learning before we can reach more definite conclusions about the learning effect of student login frequency.

6. Conclusion

As most of today's business simulation games are run online, this study made an attempt to explore the efficacy of using certain student login data to measure and track student involvement in the simulation exercise. In doing so, the study might provide empirical evidence about the learning effects of student involvement to the extent the login data reflects to some degree a student's effort level. It appears from the results of the study that login frequency may represent another tool for assessing and monitoring student involvement levels in the games due to its positive relationship with perceived student learning. The main advantages of this online measure of student activities are that it is readily available, easy to use and more objective than the conventional methods of assessing student participation in team projects. On the other hand, as a coarse measure of student involvement, login frequency may not fully capture the quality of the effort made by a student and is subject to potential manipulation by some students. Despite its limitations, student login data holds the potential of offering instructors a different way to help students gain more strategic management knowledge and skills from business simulation games and thus warrants further investigation.

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Appendix I: Survey Instrument for Perceived Student Learning

The following statements describe some possible learning outcomes you have obtained from participating in the simulation game. Please indicate the extent to which you agree or disagree with the following statements by circling the appropriate responses.

1. Gain a top management perspective on the operation of a firm.
2. Appreciate how different business functions relate to each other
3. Learn how to manage a company as a whole
4. Learn how to formulate competitive (business-level) strategies
5. Increase ability to develop strategic goals and objectives
6. Increase competence for planning business operations
7. Integrate learning from functional areas (finance, marketing, etc.)
8. Learn how to implement competitive (business-level) strategies
9. Add to ability to implement strategic decisions